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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,924	03/18/2004	Robert E. Miller III	H2160-00002	5420
36290 7590 07/31/2008 DUANE MORRIS LLP 505 9th Street Suite 1000 WASHINGTON, DC 20004-2166				
EXAMINER				
MONIKANG, GEORGE C				
ART UNIT		PAPER NUMBER		
2615				
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07/31/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,924

Applicant(s)

MILLER, ROBERT E.

Examiner

GEORGE C. MONIKANG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-13, 17-19, 21-22, 25-30, 33-36, 39-44, 48-50, 52-53, 56-61 is/are allowed.
- 6) ☒ Claim(s) 2-5, 63 and 64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/21/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims **withdrawn** from consideration are 1,6,14-16,20,23,24,31,32,37,38,45-47,51,54,55 and 62.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 5/6/2008 have been fully considered but they are not persuasive.
2. With regards to applicant's arguments in claim 2, that the combined teachings of Jot et al and Ito fail to disclose a baffle, the examiner maintains his stand. Baffles are merely structures such as a plate, wall or screen that regulates the flow of sound and Ito discloses horizontal and vertical panners which have resistances that change the level distribution of sound signals (Ito, fig. 12: 50 & fig. 13: 60; abstract; paras 0084 & 0087).
3. Applicant's arguments filed 5/6/2008, with respect to the argument about the cited reference fails to teach the microphone array being ellipsoidal as recited in claim 2 has been fully considered and are persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of official notice. Official notice is taken that both the concepts and advantages of providing an ellipsoidal microphone array are well known in the art. Thus it would have been obvious to put the microphones in an ellipsoidal structure to enable the microphone array to fit around ellipsoidal structures.
4. With regards to applicant's argument that 4 microphones are arranged in a tetrahedron, the examiner maintains his stand. The applicant fails to disclose in the specification any new advantages of arranging four microphones in a tetrahedron so therefore the examiner maintains his stand.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 2-5 & 63-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jot et al, US Patent 7,231,054 B1, in view of Ito, US Patent Pub. 2002/0172370 A1.

Re Claim 2, Jot et al discloses a system for producing an output sound field that is representative of an input sound field (abstract), comprising: a microphone signal ("P.sub.in") representative of the input sound field wherein P.sub.in comprises B-format channels (col. 8, lines 43-53), an FL (front left) channel, and an FR (front right) channel (fig. 4b: filter bank); an encoder for producing an encoded signal ("S.sub.out") from P.sub.in wherein S.sub.out comprises an ITU-compatible six channel signal (col. 12, lines 47-62); a decoder for producing a decoded signal ("P.sub.out") from S.sub.out wherein P.sub.out

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comprises B-format channels, an FL channel, and an FR channel (fig. 2; fig. 11; col. 12, lines 47-62); and a plurality of speakers for producing the output sound field from P.sub.out (fig. 2; fig. 11; col. 12, lines 47-62); but fails to disclose a microphone array for receiving the input sound field and producing therefrom (Ito, fig. 1) and the hybrid microphone array comprised of: at least 6 microphones; and a baffle (Ito, fig. 12: 50 & fig. 13: 60; abstract, paras 0084 & 0087: Baffles are merely structures such as a plate, wall or screen that regulates the flow of sound and Ito discloses horizontal and vertical panners which have resistances that change the level distribution of sound signals). However, Ito does.

Taking the combined teachings of Jot et al and Ito as a whole, one skilled in the art would have found it obvious to modify the system for producing an output sound field that is representative of an input sound field (abstract), comprising: a microphone signal ("P.sub.in") representative of the input sound field wherein P.sub.in comprises B-format channels (col. 8, lines 43-53), an FL (front left) channel, and an FR (front right) channel (fig. 4b: filter bank); an encoder for producing an encoded signal ("S.sub.out") from P.sub.in wherein S.sub.out comprises an ITU-compatible six channel signal (col. 12, lines 47-62); a decoder for producing a decoded signal ("P.sub.out") from S.sub.out wherein P.sub.out comprises B-format channels, an FL channel, and an FR channel (fig. 2; fig. 11; col. 12, lines 47-62); and a plurality of speakers for producing the output sound field from P.sub.out (fig. 2; fig. 11; col. 12, lines 47-62) of Jot et al with a microphone array for receiving the input sound field and producing therefrom (Ito, fig. 1) and the hybrid microphone array comprised of: at least 6

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microphones; and a baffle (*Ito, fig. 12: 50 & fig. 13: 60; abstract; paras 0084 & 0087: Baffles are merely structures such as a plate, wall or screen that regulates the flow of sound and Ito discloses horizontal and vertical panners which have resistances that change the level distribution of sound signals*) as taught in Ito so sound could be picked up from multiple directions and sound flow could be controlled.

The combined teachings of Jot et al and Ito fail to disclose a microphone array in an ellipsoidal as claimed. Official notice is taken that both the concepts and advantages of providing an ellipsoidal microphone array are well known in the art. Thus it would have been obvious to put the microphones in an ellipsoidal structure to enable the microphone array to fit around ellipsoidal structures.

Re Claim 3, the combined teachings of Jot et al and Ito disclose the system of claim 2, but fails to disclose wherein four of said microphones are arranged in a tetrahedron.

However, arranging the microphones in a tetrahedron is the designer's preference. It would have been obvious to arrange the microphones in a tetrahedron to make the microphone array more dynamic.

Re Claim 4, the combined teachings of Jot et al and Ito disclose the system of claim 3 wherein the plurality of speakers produces the output sound field from S.sub.out (*Jot et al, fig. 11; col. 12, lines 47-62*).

Re Claim 5, the combined teachings of Jot et al and Ito disclose the system of claim 4 wherein the plurality of speakers are arranged in a 2D arrangement (*Jot et al, col. 11, lines 3-8*).

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4. Claims 63 & 64 have been analyzed and rejected according to claims 2 &
- 5.

Allowable Subject Matter

Claims 7-13, 21-22, 25-30, 33-36, 39-44, 52-53 & 56-61 are allowed.

The following is an examiner's statement of reasons for allowance:

Referring to claim 7, the Jot et al reference (US Patent 7,231,054 B1) discloses a system for producing an output sound field that is representative of an input sound field (*abstract*), comprising: a microphone signal ("P.sub.in") representative of the input sound field wherein P.sub.in comprises B-format channels (*col. 8, lines 43-53*), an FL (front left) channel, and an FR (front right) channel (*fig. 4b: filter bank*); an encoder for producing an encoded signal ("S.sub.out") from P.sub.in wherein S.sub.out comprises an ITU-compatible six channel signal (*col. 12, lines 47-62*); a decoder for producing a decoded signal ("P.sub.out") from S.sub.out wherein P.sub.out comprises B-format channels, an FL channel, and an FR channel (*fig. 2; fig. 11: col. 12, lines 47-62*); and a plurality of speakers for producing the output sound field from P.sub.out (*fig. 2; fig. 11; col. 12, lines 47-62*). The Ito reference (US Patent Pub. 2002/0172370 A1) discloses a microphone array for receiving the input sound field and producing therefrom (*Ito, fig. 1*). The Jot et al and Ito reference taken independently or in combination with each other do not disclose or fairly suggest a system wherein S comprises the quantities: $3 \text{ s } (L, FL) \text{ s } (L, FR) \text{ s } (L, W) \text{ s } (L, X) \text{ s } (L, Y) \text{ s } (L, Z) \text{ s } (R, FL) \text{ s } (R, FR) \text{ s } (R, W) \text{ s } (R, X) \text{ s } (R, Y)$

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$s(R, Z) s(C, FL) s(C, FR) s(C, W) s(C, X) s(C, Y) s(C, Z) s(SC, FL) s(SC, FR) s(SC, W) s(SC, X) s(SC, Y) s(SC, Z) s(SL, FL) s(SL, FR) s(SL, W) s(SL, X) s(SL, Y) s(SL, Z) s(SR, FL) s(SR, FR) s(SR, W) s(SR, X) s(SR, Y) s(SR, Z)$ wherein: L represents a left speaker channel for an ITU-compatible six channel signal, R represents a right speaker channel for an ITU-compatible six channel signal, C represents a center speaker channel for an ITU-compatible six channel signal, SC represents a surround center speaker channel for an ITU-compatible six channel signal, SL represents a surround left speaker channel for an ITU-compatible six channel signal, SR represents a surround right speaker channel for an ITU-compatible six channel signal; FL represents the front left speaker channel, FR represents the front right speaker channel; W represents a B-format channel, X represents a B-format channel, Y represents a B-format channel, Z represents a B-format channel; and wherein $s(.alpha., .beta.)$ represents a transformation quantity relating the respective .alpha. and .beta. channels. as recited by independent claim 7. These aspects as summarized above are neither anticipated nor obvious by the prior arts of record.

Claims 21, 33 & 52 are allowed for the same reason as claim 7.

Claims 8-13 depend on claim 7. Claims 22, 25-30 depend on claim 21.

Claims 34-36 & 39-44 depend on claim 33. Claims 53, 56-61 depend on claim 52.

Claims 17-19 & 48-50 are allowed.

The following is an examiner's statement of reasons for allowance:

Referring to claim 17, the Jot et al reference (US Patent 7,231,054 B1) discloses a system for producing an output sound field that is representative of an input sound field (abstract), comprising: a microphone signal ("P.sub.in") representative of the input sound field wherein P.sub.in comprises B-format channels (col. 8, lines 43-53), an FL (front left) channel, and an FR (front right) channel (fig. 4b: filter bank); an encoder for producing an encoded signal ("S.sub.out") from P.sub.in wherein S.sub.out comprises an ITU-compatible six channel signal (col. 12, lines 47-62); a decoder for producing a decoded signal ("P.sub.out") from S.sub.out wherein P.sub.out comprises B-format channels, an FL channel, and an FR channel (fig. 2; fig. 11; col. 12, lines 47-62); and a plurality of speakers for producing the output sound field from P.sub.out (fig. 2; fig. 11; col. 12, lines 47-62). The Ito reference (US Patent Pub. 2002/0172370 A1) discloses a microphone array for receiving the input sound field and producing therefrom (Ito, fig. 1). The Jot et al and Ito reference taken independently or in combination with each other do not disclose or fairly suggest a system where a first two of said speakers are positioned so that: azimuthally, one is approximately 8 degrees to the left of and the other is approximately 8 degrees to the right of the 12 o'clock position of a listener; and elevationally, both are positioned substantially on a horizontal plane that intersects the listener's ears; a second two of said speakers are positioned so that: azimuthally, one is approximately 45 degrees to the left of and the other is approximately 45 degrees to the right of the 12 o'clock position of the listener; and elevationally, both are

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positioned substantially on said horizontal plane; a third two of said speakers are positioned so that: azimuthally, one is approximately 135 degrees to the left of and the other is approximately 135 degrees to the right of the 12 o'clock position of the listener; and elevationally, both are positioned substantially on said horizontal plane; a fourth two of said speakers are positioned so that: azimuthally, one is approximately 90 degrees to the left of and the other is approximately 90 degrees to the right of the 12 o'clock position of the listener; and elevationally, both are positioned above said horizontal plane; and a fifth two of said speakers are positioned so that: azimuthally, one is approximately 90 degrees to the left of and the other is approximately 90 degrees to the right of the 12 o'clock position of the listener; and elevationally, both are positioned below said horizontal plane as recited by independent claim 7. These aspects as summarized above are neither anticipated nor obvious by the prior arts of record.

Claim 48 is allowed for the same reason as claim 17.

Claims 18-19 depend on claim 17. Claims 49-50 depend on claim 48.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE C. MONIKANG whose telephone number is (571)270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George C Monikang/
Examiner, Art Unit 2615

7/23/2008

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615